

# RESERVE COPY

## PATENT SPECIFICATION



Application Date: May 13, 1940. No. 8599/40.

541,151

Complete Specification Accepted: Nov. 14, 1941.

### COMPLETE SPECIFICATION

#### Improvements in Master Cylinders for Fluid Pressure Control Systems more particularly for Vehicle Brakes

I, GIOVANNI FARINA, a Subject of the King of Italy, of 12, Corso Tortona, Turin, Italy, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:

This invention relates to improvements in master cylinders for fluid pressure control systems, more particularly for motor and other vehicle brakes.

In the applicant's prior patent No. 507,989 there is disclosed a chamber of the master cylinder of a remote control system made in two parts, one of which constitutes the main cylinder body and the other is an auxiliary cylindrical member which is fitted into a rear enlargement of the main body with its end at a distance of about 0.1—0.2 mm. from a shoulder formed on the main body thus forming a narrow annular slot across which the piston slides at the beginning of the forward stroke and at the end of the return stroke. The working space of the master cylinder communicates with the liquid reservoir through said annular slot and an axially extending annular groove or passage provided between the cylinder body and said cylindrical member. The advantages obtained by the provision of said slot are described in the above-mentioned prior patent specification.

The extremely narrow slot according to the present invention is determined by axial projections of 0.1 to 0.2 mm. depth on the end of the auxiliary member abutting the shoulder on the main cylinder body. This obviously constitutes a much easier means than the provision of inter-related parts having a corresponding difference in length. Moreover, according to this invention, the inner end of the auxiliary member is not free in the enlargement of the chamber of the main body, but is rigidly held in a centered position therein thus preventing any accidental distortion.

One embodiment of the invention is illustrated, by way of example, in the accompanying drawing in which:

Figure 1 is an axial sectional view of

the master cylinder;

Figure 2 shows a part of the cylinder on an enlarged scale, and

Figure 3 is a transverse sectional view on the line III—III of Figure 1.

The working space of the master cylinder is constituted by a main body part 1 and an auxiliary member 2 which is screwed into the main part in such manner as to leave an annular slot 5 between the inner end 2a of the auxiliary member 2 and an opposite shoulder 1a on the main part 1. In the inoperative position the piston 3 is held by a spring 4 in the auxiliary member 2. At the beginning of the forward stroke and at the end of the return stroke the piston slides across the slot 5 which is in communication with an annular groove or passage 8 connected with the liquid reservoir.

The slot 5 must be very narrow, for example 0.1—0.2 mm., in order to prevent damage to the packing of the piston 3 as pointed out in the above-mentioned prior patent specification. If the width of said slot is made entirely dependable on the length of the auxiliary cylindrical member 2, the fitting of the latter in the main body part 1 would require a great accuracy owing to the difference in the size of the slot (0.1—0.2 mm.) and the auxiliary member (a few centimetres).

According to the present invention, the member 2 is screwed home into the main body part 1 whatever its length may be. The inner end 2a of the part 2 is provided with axially extending projections 6 (Figure 2) formed by milling notches 6<sup>1</sup> in said end, said projections being of a precise size (0.1—0.2 mm.) axially of the member and abutting the shoulder 1a thus forming the annular slot 5. The diameter of the end 2a is maintained exactly equal to the outer diameter of the member 2 so that said end bears against the inner surface 7 of the main body part 1 and is exactly centered and prevented from any accidental distortion. The axial notches 6<sup>1</sup> are milled into the end of the member 2 and form grooves 10 which place the slot 5 in communication with the annular passage 8 and liquid reservoir.

[Price 1/-]

Price 5s. 9d.

Price

The sealing between the parts 1 and 2 is ensured by a rubber ring 9 which is pressed when the auxiliary member 2 is screwed into the main body part 1.

5 Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:

- 10 1. Improvements in master cylinders for fluid pressure control systems, more particularly for vehicle brakes, in which the cylinder chamber is made in two parts, namely a main body part and an auxiliary cylindrical member fitted into the main part, the inner end of the auxiliary member being separated from a shoulder formed on the main body part by a narrow annular slot communicating with an annular passage, which in turn communicates with the liquid reservoir, the piston sliding over said slot at the beginning of its forward stroke and at the end of its return stroke, characterised in that the
- 15
- 20

width of said slot is determined by axial 25 projections on the inner end of the auxiliary member which is pressed home into the main body part.

2. Improvements in master cylinders for fluid pressure control systems as 30 claimed in claim 1, characterised in that the 35 said end of the auxiliary member bears by its outer surface against the main body part in which it is centred and prevented from accidental distortions, passages being provided in said end establishing communication between the annular slot and the annular groove or passage.

3. A master cylinder for fluid pressure control systems substantially as hereinbefore described and substantially as shown on the accompanying drawing. 40

Dated this 13th day of May, 1940.

GIOVANNI FARINA,

Per: Boult, Wade & Tennant,  
111/112, Hatton Garden, London, E.C.1,  
Chartered Patent Agents.

Leamington Spa: Printed for His Majesty's Stationery Office, by the Courier Press.—1941.

*[This Drawing is a reproduction of the Original on a reduced scale.]*

Fig. 1 | III

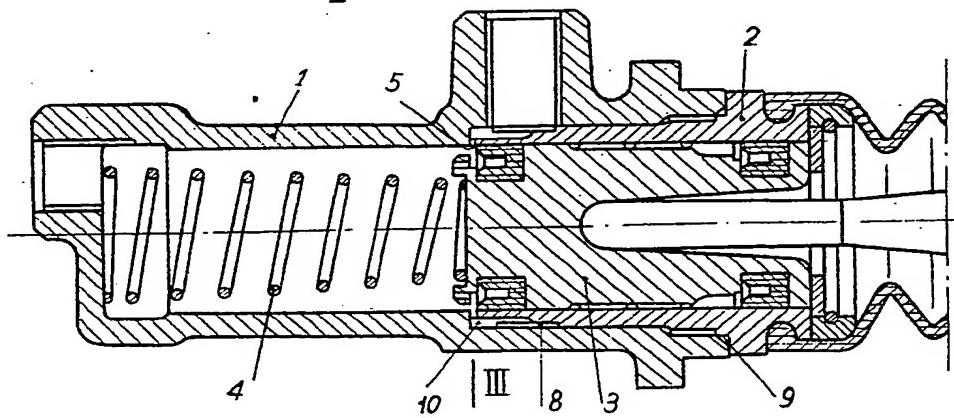


Fig. 3

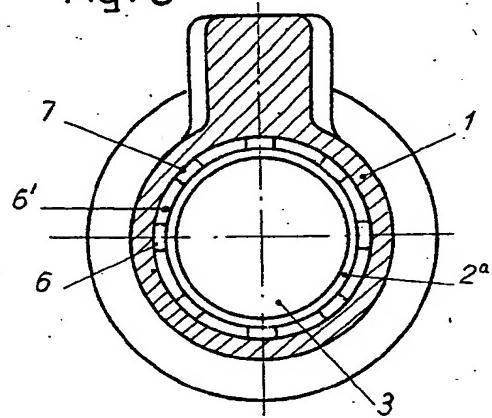
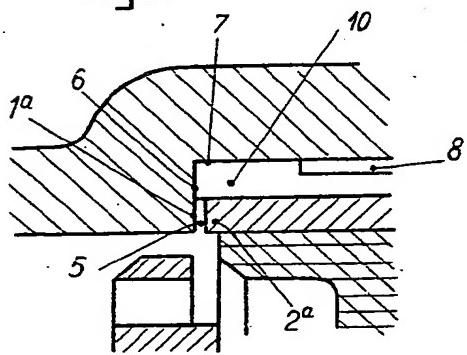


Fig. 2



Malby & Sons, Photo-Lith.